Detailed Specification

Whitley A35 HEPA Workstation

Statements in red in the Detailed Specification refer to features and benefits which we believe are exclusive to Don Whitley Scientific.

1. **Introduction**

   The Whitley A35 HEPA Workstation has been developed specifically for anaerobic studies where HEPA filtration is required and operates from two gas supplies for the most cost effecitive and efficient running conditions.

   A cylinder of anaerobic gas mixture (10% CO_2, 10% H_2 and 80% N_2) is used to maintain chamber pressure and anaerobic conditions. Nitrogen is used to flush the airlock and sleeves. Nitrogen will also supply the chamber if the anaerobic gas runs out. This change occurs automatically and the system will revert to anaerobic gas once the empty cylinder has been replaced.

   Flushing the airlock with nitrogen reduces the running costs by saving on the more expensive anaerobic gas mixture.

   If only a single gas supply is available, or in countries where anaerobic gas mixture is relatively inexpensive, the anaerobic gas mixture can be connected to both the nitrogen and anaerobic gas inlets.

2. **HEPA Filtration**

   The Whitley A35 HEPA Workstation is fitted with the unique Whitley Internal HEPA Filtration System. All the atmosphere in the chamber passes through the filter every four seconds, which ensures the chamber environment is cleaned quickly. Placing the filter inside the workstation prevents the filter becoming saturated.

   Rather than use off-the-shelf filters, DWS has worked with one of the world's leading filter manufacturers to develop a filter specifically tailored to suit this workstation.

   Levels of atmospheric cleanliness inside the workstation exceed the requirements of ISO 14644 Class 3. We can provide proof of atmospheric cleanliness.

   The A35 HEPA Workstation is fitted with a fan that circulates the internal atmosphere continuously – contributing to even temperature distribution and ensuring any internal particulates will be in motion.

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3. **Capacity**
   The workstation has a 12 litre airlock and a 300 litre main chamber. The A35 HEPA Workstation will accommodate between 400-600 x 90mm Petri dishes depending on whether plate carriers are used and which accessories and system options have been incorporated.

4. **Construction Material**
   All acrylic structures incorporated within Whitley Workstations are produced by specialised acrylic fabricators employing skilled craftsmen with many years of relevant experience.

   The fabricated acrylic chamber at the heart of every Whitley Workstation is annealed (heat treated) at least twice during manufacture.

   The chamber is manufactured from a combination of 6mm and 10mm acrylic for structural stiffness and optical clarity. During fabrication, the structure is annealed at all critical stages. The annealing process relieves the stresses induced in the structure as a natural consequence of machining, forming and polishing acrylic.

   All annealing is carried out in strict accordance with procedures laid down by the suppler/manufacturer of the acrylic sheet in a UKAS-calibrated annealing oven which is temperature mapped annually. These tests are traceable to national standards.

   The individual temperature process profile for the final annealing cycle of every completed chamber is recorded, printed and supplied with the chamber. These results, together with other production records, are filed in our archives for a minimum of five years.

   Whitley Workstation chambers are guaranteed for 10 years against faulty workmanship.

   Other workstation components are manufactured from a variety of materials including mild steel, aluminium, stainless steel, brass, cast and injected polyurethane. Each component has been carefully selected according to its function.

5. **Removable Front**
   This workstation is fitted with a removable front as standard. This gives you the ability to thoroughy sanitise your workstation between experiments and enables you to introduce and remove large items of equipment and bulk quantities of samples.

6. **Size**
   Physical dimensions: 1255mm x 710mm x 810mm (L x H x D). Incubation area: 865mm x 430mm x 490mm (L x H x D). The internal shelf divides this space into two areas, both 215mm high.

7. **Gas Requirements**
   Two gas inlets are located at the back of the workstation for anaerobic gas mixture (10% CO_2, 10% H_2 and 80% N_2) and nitrogen (oxygen free). Input pressures for both gases are:

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- Minimum 4 bar (60psi)
- Maximum 6 bar (90 psi)

8. Gas Alarms and Control Systems

All alarms and errors are displayed clearly on the touch screen panel. Low gas pressure will be displayed on the touch screen and a buzzer will sound. Inner and outer airlock door status is displayed on the touch screen.

9. System Operation:

9.1 Humidity Control

The A35 HEPA is fitted with a fully automatic de-humidification system that requires only minor operator intervention. The level of humidity in the chamber is controlled using a humidity sensor in conjunction with a cooled condenser plate. The condenser plate is chilled using a Peltier thermoelectric cooling device. A pump controlled by a timer runs periodically for a set duration and transfers any condensed water to an external reservoir. The evaporator in the external reservoir is impregnated with a biocide treated filter paper to limit bacterial growth.

9.2 Temperature Control

The operating temperature of the workstation can be set between 5°C above ambient and 45°C by adjusting the set point value. Detailed instructions are contained within the Whitley A35 User Manual, which is supplied to you at the time of installation. Both the working and storage areas of the chamber are temperature controlled with an impressively low temperature gradient throughout. This allows the full internal chamber volume to be used for incubation if desired.

A small internal incubator (able to operate at up to 60°C) is available as an optional extra.

9.3 Sample Manipulation

All Don Whitley Scientific workstations are designed to provide generous working areas. Advanced ergonomic design ensures user comfort.

9.4 Generation of Anaerobic Conditions

Any oxygen present in the workstation atmosphere combines with hydrogen contained in the anaerobic gas mixture in the presence of a suitable container of catalyst to generate water vapour which will collect on the cooled condenser plate and be automatically removed with a pump. A sachet of Anotox™ is also fitted to prolong the life of the catalyst.

10. Integral Airlock

The 12 litre airlock provides an easy and quick method for the transfer of all Petri dishes, bottles and flasks from the laboratory to the workstation. The dimensions of the airlock are 223mm wide x 254mm deep at ceiling level and 287mm deep at floor

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level x 190mm high. The airlock door opening dimensions are 200mm wide x 190mm high. The airlock cycle takes 60 seconds.

The maximum cuboid that can be introduced into the chamber via the airlock is 197mm wide x 197mm deep x 190mm high. There is no risk of compromising conditions inside the chamber.

11. Touch Screen Control

The A35 HEPA operating conditions are configured and maintained by an intelligent, programmable logic controller in conjunction with an intuitive touch screen interface. The touch screen interface displays the status conditions of all controlled parameters and also allows the user to change operating parameters to suit specific test conditions. Alarm conditions are clearly displayed and pin code controlled user access levels protects user adjustable parameters.

12. Porthole System

This workstation is supplied with our conventional portholes, which are equipped with sleeves and cuffs. The atmosphere in each sleeve is removed and replaced with either nitrogen or anaerobic gas mixture, depending on the gases connected to the workstation.

13. PLC

Incorporating such an advanced and intelligent programmable logic controller enables reliable control and accurate, fast monitoring of the workstation conditions.

14. Data Logging for A35

There is an option to purchase data logging software for the A35 HEPA. This feature will allow recording of the workstation temperature, humidity and chamber pressure conditions for traceability or reference. This information is displayed on the touch screen in graphical format. The recorded data can be downloaded via the USB interface to a memory stick and imported into a spreadsheet for further analysis.

15. Anaerobic Conditions Monitor

This fully integrated option provides confirmation that anaerobic conditions exist inside the workstation and gives an early indication if conditions begin to vary (includes data logging). A factory-fitted only option, this system displays real time oxygen levels on the touch screen display using coloured segments – green, amber or red – depending upon the levels of oxygen present. The data gathered can be downloaded for further analysis.

16. Humidification System

There is an option to purchase an automatic humidification system for the A35 HEPA. This option will provide a sterile source of humidity without the need for the user to increase the humidity by adding open trays/containers of water to the workstation.

The automatic humidification system does not increase the maximum level of humidity that can be achieved in the A35 HEPA but will increase the humidity very quickly.

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17. Customer Specific

Whatever your application, we can tailor the Whitley A35 HEPA Workstation to your requirements. For example, if you want to be able to use electrical equipment inside the chamber, you could include the option of an internal double electrical socket. If you require under shelf storage trays, we can supply 1 or 2 units.

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